1. A method of signal processing, comprising the steps of:

providing an optical carrier signal;

modulating the optical carrier signal with an input signal to provide an optically modulated signal;

radiating the optically modulated signal from a set of taps formed in an optical fiber;

performing a spatial Fourier transformation on the radiated signal;

detecting the Fourier transformed signal and converting the detected signal into an electrical signal; and

performing a digital Fourier transformation and other processing, such as calibration, on the electrical signal to output an autocorrelation of the input signal.

2. The method of claim 1, wherein the radiated signal is a function of the distance between the taps, the velocity of the signal through the fiber, and an aperture weighting function.

3. The method of claim 2, wherein the autocorrelation of the input signal is weighted by the autocorrelation of the aperture weighting function.

4. The method of claim 1, wherein the input signal is composed of the sum of two or more signals.

5. The method of claim 4, wherein the output includes the autocorrelation of the input.

6. The method of claim 4, further including the step of generating a cross-correlation between the component signals.

7. The method of claim 4, wherein the two signals are direct ladar or lidar optical signals.

8. The method of claim 4, wherein the two signals are radar signals.

9. The method of claim 7, wherein the radar signals are synthetic aperture radar signals.

10. The method of claim 4, further including the step of optically combining the two input signals.

11. A signal processor, comprising:

a coherent laser source operating at a carrier frequency;

a modulator to insert an input RF signal into the carrier;

an optical fiber radiator composed of a fiber with taps that radiate the modulated optical signal;

a lens to perform a spatial Fourier transformation on the radiated signal; and

a detector array to output the transformed signal to a digital processor for additional signal processing.

12. The signal processor of claim 11, wherein the digital processor performs an additional Fourier transformation to output an autocorrelation of the input signal.

13. The signal processor of claim 11, wherein the radiated signal is a function of the distance between the taps, the velocity of the signal through the fiber, and an aperture weighting function.

14. The signal processor of claim 12, wherein the autocorrelation of the input signal is weighted by the autocorrelation of the aperture weighting function.

15. The signal processor of claim 11, wherein the input signal is composed of the sum of input two or more signals.

16. The signal processor of claim 15, wherein the output includes the autocorrelations of component inputs.

17. The signal processor of claim 15, wherein the digital processor is operative to generate a cross-correlation of the component signals.

18. The signal processor of claim 15, further including a radar received input signal and radar transmitted signal to generate the two input signals.

19. The signal processor of claim 18, wherein the radar signals are synthetic aperture radar signals.

20. The signal processor of claim 18, further including the step of optically combining the two input signals.